

Dr. H. F. Parsons's Report on the General Sanitary Condition of the Bedlingtonshire Urban District, and on the recent Prevalence of Scarlet Fever in the District.

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THE Urban Sanitary District of Bedlingtonshire is conterminous with the township and ancient parish of Bedlington. The district, which was in bygone times a part of the domain of the Bishop of Durham, was formerly a detached part of the county of Durham, but by an Act of Parliament passed 40 or 50 years ago it was united with Northumberland. It is included in the parliamentary borough of Morpeth, but for municipal purposes it forms a separate district, having been detached in 1862, when a Local Board was formed. The area of the district is 8,436 acres. The district is bounded on the east by the North Sea, on the north and south by the rivers Wansbeck and Blyth, respectively, both streams running in narrow steep valleys, and being tidal in the lower part of their course, and on the west it adjoins the borough of Morpeth, and the parish of Stannington in the Castle Ward Union. For registration purposes it is included, with a number of other lesser townships, in the Bedlington sub-district of the Morpeth Union.

The general level of the district is somewhat elevated, especially towards the west, the highest point, Ewart Hill, at its south-west corner being 242 feet above the sea; and it shelves gradually eastwards to the sea, where a line of sand hills fringes the shore. A small brook, the Sleekburn, drains the district, flowing eastward into the river Blyth at the upper end of Blyth Harbour.

Geologically the whole of the district rests on the coal-measures, which are here worked on an extensive scale. The two principal seams worked, the Yard Coal and the Low Main have an aggregate thickness of eight feet. The surface soil is a stiff clay. The coal-measures are traversed from east to west by basaltic dykes; one such dyke runs under the village of Bedlington, and protects it from being undermined.

There are or were until recently nine large collieries in the district; one of these has been recently abandoned, and two others are standing idle at the present, owing to the depressed state of the coal trade. Four of the collieries belong to one company, the Bedlington Coal Company.

With the exception of tradesmen and persons engaged in agriculture, the population consists almost exclusively of coal miners. There are no manufactures except two or three brickworks. The north shore of Blyth Harbour lies within the district, but there is little shipping on this side of the harbour, and very few persons following maritime pursuits reside there. Few of the women go out to work.

Owing to the depressed state of trade, and the collieries standing idle, there has been much emigration from the district, and there are a large number of empty houses. At Netherton, where the collieries have been abandoned, there are some 300 houses unoccupied, long rows of cottages standing deserted without a single tenant.

The rateable value of the district, which in 1875 was 83,000*l.*, has fallen to 36,000*l.*, owing to the diminished output of the collieries (the rateable value being calculated upon the preceding year's output) and to the number of houses unoccupied. The collieries represent about half the rateable value of the district.

Streets and Dwellings.—Bedlington, which is the oldest and largest place in the district, is a large village or small town, consisting of a single broad street about three quarters of a mile long, with some shorter streets and yards leading out of it on the north side.

In the ecclesiastical district of Choppington, a mile or two to the north, are two considerable hamlets, called Scotland Gate and Guide Post. Netherton, Stakeford, Barrington, Sleekburn, West Sleekburn, and Cambois, are other groups of houses consisting almost entirely of long rows of pitmen's dwellings. In Bedlingtonshire, as in other places in the Northumberland coalfield, it is the custom for the colliery proprietors to provide houses in which the pitmen live rent free; all expenses such as repairs, rates, and scavenging falling upon the owners. If the colliery owners have not houses sufficient for the men in their employ, they select those most careful and cleanly in their habits as tenants, and the others have to reside elsewhere, an allowance being

made them for rent. The colliery houses are invariably built in long rows, each house in the row being exactly similar in pattern to its neighbours. With the exception of one or two rows built back-to-back, all houses are provided with doors and windows both at front and back, thus allowing of through ventilation. Each row has at the back a broad common courtyard, often 30 feet across, at the farther side of which the privies, ash pits, and coal-houses are placed in a row. The surface of the yards is not paved, but is formed of small coal and ashes. In the colliery rows these were kept in good repair and level, but in others they were uneven, with hollows in which the surface water and mud lodge in pools. In some cases the yards were strewn with refuse and filth. The tenants are often in the habit of throwing their refuse small coal upon the yard, so that in time it is apt to get higher than the house-floors. In one street, Bell's Place, the Sanitary Authority were about to lower the yard surface, it having become in this way raised above the level of the doorways, so that the surface water ran into the houses. The cottages have generally a large room downstairs and a scullery behind, and one or two bedrooms on the upper floor, the latter often mere garrets with low sloping ceilings. It is the invariable custom among the pitmen to use the downstairs room both by day and night, the fire never going out; the upstair rooms being used by the children. A few of the cottages, however, have but one story, all the rooms being on the ground floor. In some cases in the villages of Bedlington, Scotland Gate, and Guide Post, the houses were let in flats, access to the rooms on the upper story being had by a staircase separate from the rooms below. An old hall in the centre of Bedlington is subdivided into 16 distinct dwellings of one or two rooms each, but with this exception, all the buildings let in flats are small houses of two stories only. In one row of houses at Scotland Gate, not only is the upper story let off separately from the lower, but the lower story is divided into two back-to-back single-roomed tenements, there being thus three separate dwellings under a single roof.

The houses are substantially built of brick or stone; many of them are very damp near the base of the walls, for lack of an impervious damp-course to prevent the moisture from the ground rising up through the porous material of the wall.

The houses in Bedlington village are older, more irregular in arrangement, more various in construction, more closely aggregated on the ground, and, on the whole, in an inferior sanitary condition to those in the colliery rows.

At the east end of Bedlington there are on the north side of the main street two parallel streets called Coach Road and Walker Terrace, which are inhabited by the lower class of Irish. The backyards of these are very narrow; there are large wet open dilapidated middens in connexion with the privies, within three feet from the back doors, and in one or two cases abutting against the house; and the whole group of premises is in a most forlorn, filthy, and unwholesome state. The drain in front of Walker Terrace is a rough open channel, ill-made, and blocked with refuse. The houses in Walker Terrace, unlike most in the district, have separate backyards; these backyards are very small, measuring only about eight feet each way, and shut in by high buildings. They contain large, open, roughly made middens, which can be emptied only by carrying the contents through the house. They contain also untrapped grids, through which offensive sewer air comes up. The condition of this property has been frequently reported to the Sanitary Authority by the Medical Officer of Health, and plans have been prepared by the surveyor for its improvement, it being proposed to remove the privies and ash pits and to substitute waterclosets. Much delay appears to have taken place in the matter.

At the west end of Bedlington is another group of houses, Glebe Row, irregularly placed, and without sufficient air space. In one backyard a stream of foul liquid from a leaky midden was running over the ground. In one house the garret could not be inhabited, being unceiled and without ventilation; and a family of nine persons, including the woman who rented the house, her adult sons and daughters, and three illegitimate children, all lived and slept in a single room of 1,785 cubic feet capacity.

Sewerage and Drainage.—The sewers which drain Bedlington village have been laid by the Sanitary Authority, those in other parts of the district for the most part by the owners of property. The sewers are of pipes 12 inches or less in diameter; in the neighbourhood of houses glazed socket pipes with clayed joints are used, but elsewhere the sewers are constructed of the common unglazed earthen pipes with butt-end joints, such as are used for agricultural drains. It is asserted that the impervious clayey nature of the soil through which the sewers are laid is sufficient to prevent any leakage. The sewers are not laid in straight lines, nor provided with manholes. There are no means of ventilation other than the untrapped inlets by which the surface

water of streets and the house drainage enter, and the only means of flushing are the street hydrants, except at some of the colliery hamlets, where the stream of water pumped from the colliery is allowed to run down the sewers.

The outfall of most of the sewers is into ditches which join the Sleekburn brook; in some cases they are provided with catchpits, to retain the coarser sediment and prevent it from silting up the ditches. The central portion of the village of Bedlington drains down a street called Vulcan Terrace into an old colliery shaft, whence the sewage seems to percolate away without causing any nuisance. The sewer which drains the eastern part of Bedlington main street with Coach Road and Walker Terrace, discharges into a steep field on the side of the valley, down which the sewage trickles into the Blyth. Choppington Guide Post is drained into the Wansbeck, and Cambois into a drain which discharges by a tidal valve into the sea.

The fall of the sewers is good, and so far as could be observed, they were acting efficiently. The only instance observed of nuisance arising from absence of proper provision for drainage was at Sleekburn, where the owner of some property had built a number of additional houses and had drained them into the existing drain of 6-inch agricultural pipes, which being unequal to the work was stopped, and the sewage bursting it open had formed a stagnant pool near to the houses, causing a grave nuisance. The Urban Sanitary Authority had brought a sewer within 100 feet of the property and were about taking steps to compel the owner to connect his property with it.

The branch drains are said to be as a rule constructed of 6-inch socket pipes; they do not run under the houses, nor are there any openings within the houses. The openings are situated in the yards, but not unfrequently close to the house doors and windows. The inlets are rarely efficiently trapped; in comparatively few cases were earthenware gully traps used, the inlet usually being one of the small square catchpits about 2 feet diameter, to which the term "cesspool" is applied in the North. These are covered by a perforated flag; in some cases they are entirely untrapped, in others they are provided with iron traps which fit loosely into a hole in the flag, so that they can be taken up when the catchpit requires cleansing, leaving open chinks at the sides through which the sewer air can come up. The inlets to the drains are frequently not placed at the lowest part of the yards, and thus they do not properly carry away the surface water: this is said to be done in order to prevent the loose ashes off the surface being washed into the drains and silting them up. In one or two instances the yard drains were found blocked up, but the dry weather which prevailed at the date of inspection rendered defects of drainage less apparent.

The rows of houses belonging to the Bedlington Coal Company are provided with open channels instead of with covered drains; these channels are placed not along the centre of the backyards but nearer to the houses, so as to leave about a third of the width of the yard next the houses as a footpath, the remaining two-thirds serving as a cart road to the ashpits and coal sheds. The channels are made of concrete, and are laid in straight lines with a uniform fall. An inspector is employed by the company to go round and see that they are kept clear. They are said to answer better than pipe drains for the class of persons for whose use they are intended. Certainly they were found free from offence in cases where they were kept clean; and though they are liable to be partially stopped by solid matters thrown in by careless people, yet they can be cleared out much more readily than a pipe drain. The chief objection to them from a sanitary point of view is that should a case of infectious sickness occur in a house at the upper end of the row, the offscourings must flow exposed past the doors of all the houses lower down. Children, too, playing in the yard will be likely enough to soil themselves with the liquid flowing down the gutter. At their lower ends the gutters discharge into untrapped catchpits about 3 feet square, which are emptied of sediment from time to time: these give off offensive effluvia within a few feet of the house doors.

Disposal of Excrement.—Except in a few cases where waterclosets have been substituted by order of the Sanitary Authority for midden privies in confined situations, the midden privy is the only method of excrement disposal in the district. The usual arrangement is one ashpit between two privies. The ashpits are very large indeed,—10 feet by 5 feet is not an unusual size,—they are invariably open, and most frequently receive the drip off the privy roofs; the walls of many were dilapidated and broken down.

The privies are generally without any openings for light and ventilation, and are not so constructed as to facilitate the mingling of the excreta with the ashes. Some, even newly built ones, had double seats. Not a few of the privies in Bedlington and Choppington were in a very dilapidated and filthy state. In the colliery rows each house has, as a rule, its own privy. The Urban Sanitary Authority insist that for existing

houses privies shall be provided at the rate of at least one privy for every two houses, and that the privy shall be at least 15 feet from any dwelling-house.

There is no public provision for the removal of nightsoil and ashes. In the colliery rows this is done at the expense of the proprietors, in other cases the occupants have to get it done at their own expense. At Cambois, which is on the coast, a line of rails is laid alongside each row of ash pits and coal sheds, and a train of trucks drawn by an engine plies up and down to deliver coals and remove refuse; the latter is simply disposed of by being tipped into the sea. In the remainder of the district the scavenging is done by the farmers, who use the matter removed as manure. This arrangement can hardly be expected to work well, for at the time of year when the frequent removal of refuse is most necessary, on account of the rapidity with which decomposition proceeds in hot weather, and of the tendency to diarrhoeal diseases which then prevails, the farmers' horses and men are busy with the harvest. As a matter of fact, the scavenging was most unsatisfactorily performed; ash pits overfull, and piled up with refuse, which lay also scattered around upon the yard, were so frequent as to be almost the rule in the district, and the Medical Officer of Health in his reports makes frequent complaint of the same state of affairs.

The keeping of the ash pits properly scavenged is rendered more difficult by the circumstance that coal is supplied gratuitously to the pitmen by the colliery proprietors. Hence there is no inducement to be economical in the use of fuel; the cinders are not sifted out, and a large quantity of ashes is produced, which speedily fills up the ash pits. House slops containing solid matter are commonly thrown into the ash pits.

The waterclosets substituted by requirement of the Sanitary Authority for midden privies in places where the latter proved a nuisance by reason of their proximity to dwelling-houses, consist of a plain hopper and syphon trap, and are flushed by a small service cistern. They are in all cases out of doors. They appeared to act well, but the sewers of the district are not adapted to a general adoption of the water carriage system.

Water Supply.—The district is provided with a public supply of water, which is carried to every part with the exception of a few isolated houses. The water is taken from the river Blyth, filtered through a bed of sand and gravel, and pumped into an open reservoir at the highest part of Bedlington. The river Blyth above the point at which the water is ordinarily taken has received the sewage of a few houses at Stannington and Hartford Hall, and probably elsewhere. The pumping station and filter beds are situated at Humford Mill, about a mile south of Bedlington, but the water is usually taken from above a weir at Acorn Bank, a mile higher up. At the time of this inspection however the conduit, owing to the effects of a landslip, was under repair, and the water was in consequence being pumped from the river at a point close to the waterworks. Between the weir and this point the river has been joined by a brook, which receives the drainage of a few houses in the township of Bebside. The reservoir at Bedlington is sufficiently high to supply all parts of the district by gravitation, except the hamlet of Netherton, two miles to the west, which is supplied from a wooden tank, to which the water is forced by the aid of a tall standpipe. At the time of my inspection the physical characters of the water were satisfactory. The appended analysis by Mr. Pattinson, Borough Analyst of Newcastle, shows its character as regards mineral constituents. The water is carried by iron pipes to all parts of the district, and is supplied to the inhabitants by means of cast-iron water posts or "pants." These water posts are provided at the rate of about one for every 30 houses. Some of the houses are as much as 100 yards from the posts which supply them with water. The water is supplied by a constant service. The amount supplied is stated by the Surveyor to be 345,600 gallons per week; if so, the average daily consumption of water is only $3\frac{1}{3}$ gallons per head, a very small quantity, even though supplemented to some extent by rain water for washing purposes. The inhabitants are free to use as much water as they please, and no special charge is made for it, the cost being paid out of the general district rate.

The water was first supplied in 1876; before that date the inhabitants had to use what water they could get from wells and rainwater tubs. Choppington was supplied with water pumped from the North Choppington Colliery. The water was pumped into tanks at the colliery and distributed by pipes. At present there is a tap at Scotland Gate which is supplied with filtered water from Choppington Colliery. Colliery water is not a satisfactory source of supply, being liable to be contaminated with salts of iron, derived from the oxidation of pyrites in the coal shale, and with the excretions of men and horses employed in the pit. There is an open dipping well at the bottom of Glebe Row which is liable to contamination.

Slaughterhouses.—Eight slaughterhouses were visited in the district. Of these only one had a smooth concrete floor; the floors of the others were uneven, and of brick or stone, and in one case of earth. The blood is caught in a receptacle, and any spilled, instead of being washed away with water, is absorbed with sawdust and swept up, so that it is less liable to lodge in the joints of the floor. The walls of most were rough and daubed with blood, and had not been limewashed for a considerable time. In only one of them, which was ill-ventilated, was there any offensive smell perceptible, and most were sufficiently far removed from houses as not to be a nuisance.

Common Lodging-houses.—There are three common-lodging houses in the district, all in Coach Road and Walker Terrace, places previously alluded to in this report. These houses were, two of them especially, dirty and ill kept, the walls were rough and uneven, or covered with dirty paper, and rarely, if ever, limewashed. The backyards were small and narrow, and there were large open offensive middens and untrapped drain inlets within 8 feet of the houses. The sergeant of police is appointed inspector of common lodging-houses, but his visits appear to have reference rather to the apprehension of evil doers, than to the sanitary condition of these places. The minimum cubic space for each occupant in three rooms measured was from 220 to 250 cubic feet. No cases of infectious disease have occurred in 1879 in common lodging houses.

Schools.—There are 13 elementary schools in the district, some of which are maintained by the colliery proprietors, and others belong to different religious denominations. Almost all of these were visited in the course of the inspection, and most of them were found in a fairly satisfactory condition as regards cleanliness and ventilation. Sleekburn Colliery school was in a very dirty state, and the air inside was very close. The walls were of rough brick below, and were begrimed with dirt, dust, and cobweb, and it was stated that they had not been limewashed for 20 years; the floor was worn through into holes, and the privies on the girls' side were in a very dirty state. The Barrington Colliery school was not as clean as it should be, and the mixed school at Cambois was insufficiently ventilated.

At the Sleekburn and West Sleekburn Colliery schools the privies were placed over a brick trough through which a stream of water from the collieries was continually running, thus carrying the excrement away; at the other schools privies with open middens were in use, as in the district generally.

The managers and teachers of the schools, and also the school attendance officers, asserted that children who had any infectious disease, or who lived in houses where such disease had existed, were kept away from school and not allowed to return until the medical man in attendance pronounced them fit to do so. The Roman Catholic School was closed for seven weeks in August and September on account of the prevalence of scarlet fever among children attending it, but had been reopened at the time of inspection, it being considered that children were as likely to contract infection by playing about together with convalescents at home as by attending school.

Population.—The population and number of houses in the parish of Bedlington are thus given in the census returns for 1871.

Census.	Population.			Houses.		
	Males.	Females	Total.	Inhabited.	Uninhabited.	Building.
1861 - -	4,328	4,000	8,328	1,490	41	6
1871 - -	7,131	6,363	13,494	2,646	71	18

Thus the population between 1861 and 1871 increased 62 per cent., or at the rate of 4.7 per cent. annually. Supposing the same rate of increase to be maintained, the population at the present time would be about 20,000, but from the large number of houses now standing empty it is almost certain that this rate has not been maintained; on the contrary, that the population during the last three years has declined rather than increased. Mr. Short, Collector of Rates, gives the following figures:—

Date.	No. of Inhabited Houses.
July, 1875 -	- - - - 3,210
July, 1876 -	- - - - 3,243
June, 1877 -	- - - - 3,205
July, 1878 -	- - - - 2,779
Oct., 1879 -	- - - - 2,825

Reckoning five inmates to a house, the average number found at the last census, the present population of the district would be 14,125, so that if we take it as 15,000, we shall probably not underestimate it. In calculating the birth and death rates in the following tables, the population is assumed to be 17,000 in 1874-75 and—76, 16,000 in 1877, and 15,000 in 1878.

Vital Statistics.—The figures in the following tables are for the most part taken from the annual reports of the medical officer of health.

TABLE 1.

Year.	Births.			Deaths from all Causes.						Deaths from principal epidemic diseases.			Deaths under One Year.			
	Total	Rate per 1,000.		Total Number, Bedlingtonshire.		Rate per 1,000.		Total	Rate per 1,000.		Total	Rate per 100 Births.		Total	Rate per 100 Births.	
		Bedlingtonshire.	England and Wales.	In Township.	With Work-house deaths added.	In Township.	With Work-house deaths added.		Bedlingtonshire.	England and Wales.		Bedlingtonshire.	England and Wales.		Bedlingtonshire.	England and Wales.
1874 -	866	51·0	36·1	479	*	28·1	*	22·3	*	*	3·6	*	*	15·1		
1875 -	914	53·7	34·0	397	402	23·3	23·8	22·8	106	6·2	3·3	155	16·9	15·8		
1876 -	818	48·1	36·5	337	340	19·8	20·0	21·0	82	4·8	3·0	122	14·9	14·6		
1877 -	816	51·0	36·1	311	314	19·4	19·6	20·4	65	4·0	2·6	102	12·5	13·6		
1878 -	636	42·4	35·9	250	254	16·7	16·9	21·7	37	2·5	3·3	75	11·8	15·3		

* Not ascertained.

TABLE 2.

	Age at Death.	1876.	1877.	1878.	Total.	
	Under 1 year	-	-	122	102	75
	1-5	-	-	65	59	42
	5-15	-	-	25	23	26
	15-25	-	-	24	19	16
	25-60	-	-	61	60	45
	60 and over	-	-	40	48	46
	All ages	-	337	311	250	898

TABLE 3.

	Causes of Death.	1875.	1876.	1877.	1878.
Small pox	-	-	-	-	-
Measles	-	-	1	11	2
Scarlet fever	-	-	17	10	15
Diphtheria	-	-	-	-	3
Whooping cough	-	-	26	16	6
Enteric fever	-	-	15	15	17
Other fevers	-	-	-	-	12
Diarrhoea and dysentery	-	-	47	30	19
Phthisis	-	-	25	28	27
Bronchitis, pneumonia, and pleurisy	-	-	26	33	43
Heart disease	-	-	16	20	20
Injuries	-	-	9 5	12	111
Other causes	-	-	21	162	45
Total	-	397	337	311	250

The death rates in the above table (1) show a steady and progressive diminution during the past five years. It may be a question how much of this apparent improvement is due to the diminution of the population, but that the whole of it cannot be so accounted for is shown by the fact that the births have not diminished in like proportion. In 1874 there were 55 deaths to 100 births, in 1878 only 39 deaths to 100 births. Again, the infant mortality, as calculated by the proportion of children who died under one year old to those born, a method which is little affected by fluctuations in the population, has fallen from 16·9 in 1875 to 11·8 in 1878. So also, the death rate from the seven principal zymotic diseases, those enumerated in the upper part of Table 3, fell from 6·2 to 2·5 per 1,000 of the estimated population, a declension out of proportion to that in the total mortality.

The Medical Officer of Health attributes this diminution of mortality to the improvements that have been effected in the sanitary condition of the district, and especially to the introduction in 1876 of a better and more abundant supply of water.

Prevalence of Scarlet Fever.—Medical men who practise in the district state that it is never free from scarlet fever for long together, but in 1878 that disease seemed to have reached a minimum, only two deaths having been registered as caused by it. No deaths occurred from this cause during the first four months of 1879, but during the succeeding six months 65 deaths took place, viz., in May, 14; June, 7; July, 9; August, 10; September, 9; and October, 16.

Scarlet fever had been prevalent during the winter in the adjacent borough of Morpeth, and in the spring at Ashington Colliery, in the parish of Bothal across the Wansbeck.

The first cases in the Bedlingtonshire district, so far as could be ascertained, occurred in April, but it was difficult to ascertain anything satisfactorily about the mode in which the outbreak commenced, owing partly to several of the families earliest attacked having removed out of the district so that they could not be found, and partly to the circumstances attending the beginning of the outbreak having passed out of the minds of people of a class who are not usually accustomed to trace cause and effect in the occurrence of disease.

In the earlier part of the outbreak scarlet fever was very prevalent in the Choppington district, and occasioned 13 deaths, of which the latest took place on August 4th.

About the same time that it commenced at Choppington scarlet fever seems to have made its appearance in some houses of a poor class at the western end of Bedlington village. The earliest case appears to have been a child named Thoburn, lodging at a house in Glebe Row, who began to be ill on April 21st. The cause of this case was not ascertained. A child named Holden living in a neighbouring court, Baptist Yard, died of scarlet fever on May 2nd, after two days' illness. This child had come about three weeks before from Newcastle, in which town scarlet fever had been prevalent. The incubation period of scarlet fever does not exceed eight days, so that if the dates be correct, the disease must have been contracted subsequently to its return to Bedlington, but it is possible that the earlier symptoms may have been so slight as to escape observation. A brother's child living in the same house sickened on May 9th and died on May 15th. The other early fatal cases in Bedlington all occurred in this immediate neighbourhood. The Holdens did not go to school, but in most of the other families the children went to the Catholic School. Scarlet fever continued prevalent in the village of Bedlington from that time to the date of inspection, 31 deaths having occurred there. The other hamlets have been attacked later and have suffered more slightly. Cambois, which is next the sea, at a distance from the other places, has hitherto escaped almost entirely, although in frequent communication with North Seaton, a colliery village on the north bank of the Wansbeck, which has suffered very severely. At the time of inspection the disease was chiefly confined to Bedlington and Sleekburn.

Of the mode of propagation of the disease but little could be ascertained. In few cases could direct communication with an infected person be made out. In some instances, as those of Choppington Church School and the Roman Catholic School at Bedlington, several cases occurring about the same time had been in attendance at the same school.

The courtyards common to a large number of houses, serving as playgrounds for the children, must afford many opportunities for the spread of infection from one to another by personal intercourse, and the frequently uncleanly state of ashpits, gutters and drains into which excreta are thrown must tend in the same direction. Although the disease has not been invariably most prevalent or most fatal in the worst parts of the district, yet Bedlington village has on the whole suffered more severely than the outlying colliery hamlets. The people are said to be very careless about the spread of infection, commonly going about to gossip in neighbours' houses where cases of infectious sickness exist. The custom of using the downstairs room as a bedroom in cases of sickness must tend to promote the spread of infection, since all persons coming to the house must come into the room where the sick person is lying.

Other epidemic diseases have been at a low point in 1879. Thirteen deaths from whooping cough occurred, all in the first six months. Only three deaths have occurred from diarrhoea, and two from "fever," viz., one from typhoid, the other, a child, from "remittent fever." The death from typhoid occurred in one of the Choppington Colliery houses, on October 7th.

Sanitary Administration.—The Local Government Acts were adopted in the district in 1862. The Local Board consists of 10 members, who meet monthly.

The Urban Sanitary Authority have appointed Mr. D. Carmichael as Medical Officer at an annual salary of 40*l.*, of which one half is repaid by the Local Government Board.

The Medical Officer of Health makes frequent inspections in the district, and reports to the Sanitary Authority every month upon the health and sanitary condition of the district. The registrar furnishes him with monthly lists of deaths occurring within the district, but the lists are defective in that they do not give the name of the deceased; the registrar, however, supplies this in the case of deaths from infectious diseases. The Medical Officer of Health prepares an annual report, which is printed by order of the Sanitary Authority, and a copy of which is forwarded to the Local Government Board.

Mr. Fenwick is appointed inspector of nuisances and surveyor of waterworks and highways at a salary of 120*l.* per annum, no part of which is repaid from the Parliamentary grant. His whole time is devoted to his duties. During the three years 1876-78, 657 nuisances were abated. Most of the places specially complained of by the Medical Officer of Health in his reports, were visited during the present inspection, and in many of the cases the conditions complained of were found to have been more or less satisfactorily remedied.

The Urban Sanitary Authority have a set of byelaws which were adopted in 1862. These embrace provisions with respect to the conduct of meetings, for the regulation of common lodging-houses, for the cleansing of footways and removal of refuse, for the regulation of slaughter-houses, and with respect to the construction of new streets and buildings. There is a surveyor of plans and buildings, Mr. Hogarth, whose duty it is to examine all plans submitted to the Urban Sanitary Authority, and to supervise the erection of new buildings. Formerly the Authority were very lax in carrying out their duties in this and other respects. There is a row of back-to-back houses at Scotland Gate, the plans of which were passed by the Sanitary Authority, although they had a byelaw which requires that every house to be newly erected shall have at the rear or side an open space of at least 150 square feet in area. The Sanitary Authority seem however to be now more careful in this respect, but very little building has taken place lately. Nothing however is done towards improving the midden system even in the case of new buildings; some privies lately erected in connexion with new houses, the plans for which had been passed by the Sanitary Authority, had open ash-pits measuring 10 feet by 5 feet.

The Urban Sanitary Authority have borrowed 29,451*l.* for works of water supply, of which 26,898*l.* are still owing.

Disinfection.—Disinfectants are supplied free of cost to persons in whose houses serious infectious sickness has occurred, and at the termination of the illness the house is in most cases fumigated with burning sulphur. The Sanitary Authority do not possess any apparatus for the disinfection of clothing or bedding by heat.

Hospital Accommodation.—There is a small cottage hospital at Blyth, which is intended for the use of sailors coming to the port. It was provided by private effort, but the Bedlington Urban Sanitary Authority pay about 9*l.* a year towards its maintenance. It was originally a row of one-storied cottages, and has three wards with two beds in each, and a kitchen and bath room. Its use is not confined to cases of infectious sickness, other diseases and injuries being treated in it. There is no other accommodation available for the district. The question of providing a small hospital for isolation of cases of infectious disease has been lately under discussion, but was negatived, the Sanitary Authority being advised that they had in most cases no power to compel sick persons to enter it, and being of opinion that few would do so voluntarily. In this connexion, however, the Sanitary Authority do not appear to have taken into account the probability that popular prejudices against hospitals will disappear in this district, as they have disappeared elsewhere, as people get experience of the benefits accruing from hospital isolation and treatment. And it may be believed that the Sanitary Authority's power of compulsion, in any case where it may unhappily be needful, will prove to be more considerable than the Authority appear to have supposed.

In conclusion, I have to express my obligations to the members and officers of the Bedlingtonshire Urban Sanitary Authority for their courteous assistance in the course of this inspection.

H. FRANKLIN PARSONS, M.D.

RECOMMENDATIONS.

1. In all cases where nuisance arises from the ill-paved and uneven condition of back streets and common court yards, the Sanitary Authority should take steps to cause such streets or yards to be properly levelled, channelled, and repaired or paved.

The Authority should also use such means as they possess under the Public Health Act, 1875, to prevent nuisance arising from the scattering of filth and refuse upon the surface of the streets and yards ; and the Authority should make byelaws under section 44 of the Act.

2. The condition of the sewers of the district should receive the continued attention of the Sanitary Authority and their officers ; and if they are found not to act efficiently they should be taken up and relaid on approved principles. They should be provided with means of ventilation by shafts or otherwise, so situated as not to be liable to contaminate the air in the interior or neighbourhood of dwellings.

Proper disconnection of the air of house drains from the air of public sewers should be secured by duly-ventilated traps on the main drains of houses ; and generally, in the construction of sewers and house drains, the Authority would do wisely to be guided by the principles of the Board's " Suggestions as to plans of Sewerage and Drainage."

3. The Urban Sanitary Authority should at once take measures for placing the arrangements for storage and removal of excrement on a more satisfactory footing.

The present system of midden privies should be abolished and some better system substituted.

If the Urban Sanitary Authority consider that the water carriage system is not adapted to the circumstances of the district, some one of the improved dry systems should be adopted.

If privies with fixed receptacles for excrement be retained, they should be constructed on the principles set forth in the official report to the Local Government Board, " On certain means of preventing excrement nuisances in towns and villages." The more important of these principles as regards this district are, that the ashpit should be so contrived as to facilitate the mingling of excreta with ashes, that it be reduced to the smallest practicable dimensions, made watertight, roofed in, and ventilated.

Some form of the pail closet, in which the excreta are kept apart from the bulk of the dry refuse, will, however, probably be found better adapted to the requirements of the district, owing to the large bulk of cinders which find their way into the ashpits.

In either case it will be necessary that the Sanitary Authority, using their power under section 42 of Public Health Act, should themselves make provision for the frequent and effectual removal of nightsoil and refuse.

4. The Urban Sanitary Authority should take such steps as may lie in their power under the Rivers Pollution Prevention Act or other Acts, to protect the water of the River Blyth from pollution by sewage or otherwise.

All wells or water supplies of a doubtful character should be examined, and if found to be contaminated, should be closed.

5. The byelaws with reference to new streets and buildings, common lodging-houses, and other matters for which the Sanitary Authority are empowered to make byelaws, should be revised so as to give effect to recent provisions of Public Health law, and to embody the teaching of an enlarged sanitary experience. For this purpose the model byelaws issued by the Board may be consulted with advantage by the Sanitary Authority.

6. The Authority should provide a place for the disinfection, by heat or otherwise, of articles of clothing or bedding which have been exposed to infection, together with a hand-cart, with properly secured lid, for the conveyance of such articles without risk to the public.

7. The Sanitary Authority should provide hospital accommodation for the isolation of persons suffering from infectious diseases who may be without proper lodging and means of isolation at home.

As a commencement, under the present circumstances of the district, the Authority might engage a detached cottage in which a man and wife, without family, may reside, to take care of the house when empty, and to nurse any patients that may be admitted. The provision of such accommodation should not be deferred until another epidemic has occurred, as the chief use of such a building is to be in readiness to isolate the first cases of infectious disease that may break out, and thus prevent it from establishing itself in the district. In furtherance of this object, medical practitioners may usefully

be invited to avail themselves of the hospital for the treatment therein of any patients who at their own houses are so lodged as to be dangerous to other members of the family.

An ambulance should also be provided for the conveyance of persons suffering from infectious disease to the hospital.

The provisions of the Public Health Act against the exposure of infected persons or things should be strictly enforced.

APPENDIX.

ANALYSIS of water supplied to Bedlington from River Blyth above Humford Mill in 1876,
made by Mr. Pattison, Analytical Chemist, Newcastle-on-Tyne.

It contains as follows per imperial gallon :—

					Grains.
Carbonate of lime	-	-	-	-	8.74
Carbonate of magnesia	-	-	-	-	3.29
Sulphate of lime	-	-	-	-	5.44
Sulphate of magnesia	-	-	-	-	1.36
Chloride of sodium	-	-	-	-	2.37
Nitrate of soda	-	-	-	-	a trace
Organic matter	-	-	-	-	0.80
Total solid matter					<hr/> 22.00

Hardness before boiling 14.8 degrees.

This water is similar in character to the Whittle Dene water supplied to Newcastle and Gateshead.

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